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Yiwen Zhang
University of Arizona

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Knowledge Sourcing: A Channel Preference Perspective

Yiwen Zhang

University of Arizona

Yiwen@email.arizona.edu

ABSTRACT

Organizations invest in information and communication technology (ICT) such as knowledge repositories and electronic communities of practice to augment traditional means of transferring knowledge, such as via face-to-face interactions with co-located colleagues. These systems make it possible to create a multi-modal knowledge network in which employees have a choice of which channel to use for knowledge transfer. This study investigates the sourcing side of knowledge transfer, and develops hypotheses to assess the degree to which task characteristics, knowledge characteristics and individual characteristics determine the preference for channel selection. This research contributes to theory in knowledge management as it expands our understanding of how various knowledge transfer channels are selected. The research contributes to practice by helping companies understand why employees may or may not be using the various knowledge channels available to them.

Keywords

Knowledge sourcing, knowledge transfer, knowledge repository, community of practice

INTRODUCTION

In the knowledge-based view of the firm, knowledge is the source of a firm's competitive advantage and the primary driver behind a firm's value (Grant 1996; Spender 1996; Teece 2000). Knowledge workers are the key players and action takers in this perspective because they are involved in knowledge transfer – the critical knowledge management practice. Therefore, both academics and practitioners are trying to understand what influences knowledge transfer behavior. To do so, both groups are focusing on knowledge workers' knowledge sharing and knowledge sourcing (e.g., Zander and Kogut 1995; Szulanski 1996).

Recently, with the development of advanced information technology, organizations invest in information and communication technology (ICT) such as knowledge repositories and electronic communities of practice to augment traditional techniques for transferring knowledge - through face-to-face interactions with co-located colleagues. This promotes the perspective of a multi-modal knowledge network, which is defined as the collection of multiple people and multiple information management systems with which individuals interact to provide or receive information to perform tasks (Monge and Contractor 2003). However, most knowledge transfer studies examine individual use of a single channel (e. g., Kankanhalli et al. 2005; Poston and Speier 2005) or treat different methods of knowledge transfer as broadly interchangeable (Davenport et al. 1998; Earl 2001). Since this research approach does not adequately represent reality, researchers have called for more research that examines multi-modal knowledge networks (Davenport and Klahr 1998; Argote et al. 2003; Kane and Alavi 2005).

In this study, we focus on the sourcing side (rather than sharing side) of knowledge transfer, and investigate whether or not there is a channel preference and, if there is, what antecedents lead to which particular channels. In particular, we select three representative knowledge sourcing channels in organizational knowledge transfer practices based on their popularity and underlying communication mode: face-to-face interaction with colleagues, organizational knowledge repositories, and discussion forums of electronic communities of practice; and three types of antecedents to channel preference: task characteristics, knowledge characteristics and individual characteristics. For the purpose of simplicity, we use "colleagues", "(knowledge) repositories", and "(discussion) forums" to represent the three channels. We focus on the following research question:

How do task characteristics, knowledge characteristics and individual characteristics influence knowledge workers' channel preferences during their knowledge sourcing activities?

THEORETICAL MODEL

The following discussion proposes a theoretical model (see Figure 1) of channel preference for knowledge sourcing. Aspects of the task, the knowledge, and the individual are hypothesized to influence channel selection. In this section, we define the constructs in the theoretical model and develop hypotheses.

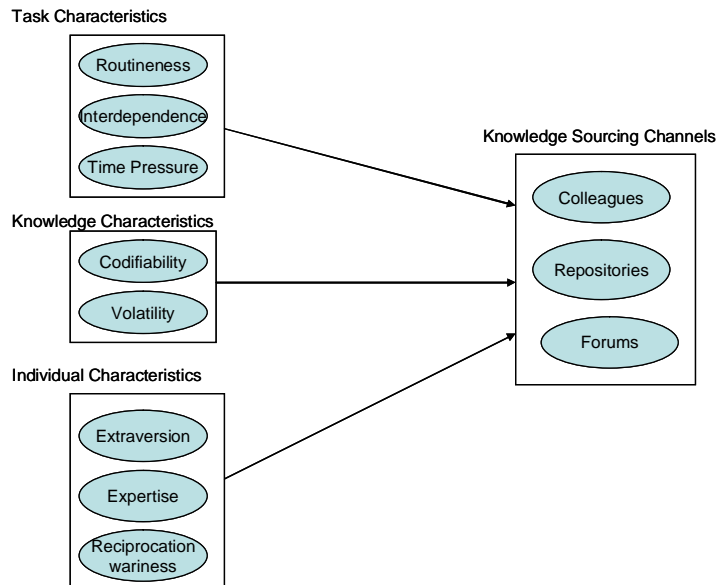


Figure 1. Proposed Model for Channel Preference

Influence of Task Characteristics

Task Routineness

Task routineness has been conceptualized or described in different ways in previous literature. We adopt Gray and Meister's (2004) definition, that routineness is "the extent to which a body of work involves repetitive processes that remain stable over time". With this definition, we focus on the procedures or the steps involved in completing a task. It is common that organizations document a set of routines and policies into knowledge repositories for the employees to retrieve (Hansen et al. 1999; Zack 1999). By doing so, the objective is to maintain organizational memory (Huber 1991), as well as to facilitate knowledge reuse (Markus 2001). When the tasks are routine, the knowledge worker would expect to find those documents in the repository. On the other hand, when the task is non-routine, organizations are less motivated to document for the "economics of use" (Kankanhalli et al. 2003) and have fewer resources (e.g., knowledge workers familiar with the processes) to do the documentation.

Discussion forums are used for spatially separated communities of practice to exchange work related experience (Wenger and Snyder 2000). They are used especially for emerging topics that the knowledge worker can not solve by themselves, and a certain level of professionalism implies that it is a courtesy to not ask easy questions (Yates et al. 1999). Colleagues might be an alternative source to repositories, since they are familiar with the routine and are easy to access. However, Dewhirst (1971) suggests that there is a psychological cost in selecting the colleagues as knowledge sources. He argues that when the information seeker asks an accessible colleague for knowledge, he or she is implicitly making a partial admission of limited competence. If the knowledge is easily assessable and easy to understand, it is unlikely that the knowledge worker chooses to turn to colleagues because of the psychological cost.

Hypothesis 1. The higher the task routineness, the more likely knowledge workers will turn to a repository rather than colleagues and forums.

Task Interdependence

Interdependence is conceptualized as the degree of cooperation or collaboration required to accomplish work (Thompson 1967) or the degree to which individuals are reliant on each other in accomplishing a goal (Campion et al. 1993). When the

tasks are highly interdependent, the knowledge workers need to coordinate with others, and need to know more about others' work (Leonard and Sensiper 1993).

When interdependency exists, knowledge workers often use the output from their colleagues as their input, and it is also necessary to use the colleagues as complementary resources for explanation and interpretation (Hertzum and Pejtersen 2000). Allen (1988) finds that the outputs from one knowledge worker are usually in a form that cannot be directly used as inputs to the other knowledge workers, and the knowledge workers using others' output need some explanation and interpretation of the information contained in the documentation. He suggests that for knowledge workers, asking the author of the input document for explanation and extra information is more efficient than figuring it out by themselves. Zipperer (1993) finds similar results. In his study, design engineers who depend on documentation, such as requirement analysis, from colleagues, show strong preference for getting information from their colleagues.

On the other hand, using knowledge repositories and discussion forums require the knowledge worker to ask the right question or use the right query. However, when there is high interdependency with other workers, the knowledge worker may not have adequate knowledge to ask the right questions. Background knowledge from the knowledge worker's area, as well as that of his/her coworkers may be required. At the same time, even if the knowledge worker forms well-framed question or query, he might get a lot of information or documents in using a knowledge repository since many documents may be relevant to the task with high interdependency. This exaggerates the information overloading problem in using repository and forums (Jones 1995; Butler et al. 2004). These problems decrease the likelihood for knowledge workers with highly interdependent tasks to use repositories or forums.

Hypothesis 2. The higher the task interdependency, the more likely knowledge workers will turn to colleagues rather than repositories and forums.

Task Urgency/Time Pressure

Task urgency is the individuals' perceptions of deadlines and the rate at which tasks must be performed (Landy et al. 1991). While the communication literature shows that the more urgent the task, the less likely is a knowledge worker to choose an asynchronous medium for communication (Picot et al. 1982; Straub and Karahanna 1998), there is less evidence to infer how task urgency affects knowledge seeking behavior, which involves intense information processing rather than just reaching the recipient as in communication literature. Gray & Durcikova (2006) find that analyst's perception of time pressure is negatively related to their use of knowledge repositories, while having no significant effect on use of colleagues or documents. Based on the fact that analysts who feel they are under more time pressure sourced less knowledge via the repository, they suggest that the process of finding and accessing knowledge in the repositories remains too time-consuming.

Hypothesis 3. The higher the task urgency, the more likely knowledge workers will turn to colleagues rather than repositories and forums.

Influence of Knowledge Characteristics

Knowledge Codifiability

Knowledge codifiability refers to how easy the knowledge can be coded into written documents. If the knowledge is of low codifiability, it is a difficult task for both knowledge receivers and knowledge seekers to communicate through written forms. From the knowledge sender's perspective, the knowledge is difficult to code into written form. Unlike explicit knowledge that can be expressed in numbers and words and shared formally and systematically in the form of data, specifications, and manuals, tacit knowledge is difficult to express and formalize (Argote et al. 2003; Desouza and Evaristo 2003). Repositories and forums both depend on the written form of communication, and do not have good support for interaction between knowledge seekers and sources. Although forums support the interaction through a question-answer format, according to media richness theory (Daft and Lengel 1986; Daft et al. 1987), forums are text-based electronic communication, and are characterized by low media richness. Thus they have low ability to provide immediate feedback and the multiple cues necessary for multiplexed communication (Hansen and Haas 2001).

Hypothesis 4. The high the knowledge codifiability, the more likely knowledge workers will turn to repositories rather than colleagues and forums.

Knowledge Volatility

Knowledge volatility refers to the extent to which knowledge is subject to change (Holsapple and Joshi 2001). This characteristic concerns the temporary value of the knowledge. While the researchers in knowledge management haven't been

using knowledge volatility very frequently, volatility has been an important dimension of economic and business environment (Kankanhalli et al. 2003). It reflects the rapidity of change in the business environment. Knowledge volatility thus is appropriate to be used to refer to the rapidity of change of knowledge.

High volatility knowledge is time-sensitive. If this type of knowledge is stored in the repository, it needs to be refreshed continuously what requires significant amount of time and efforts (Markus 2001). Conversely, if knowledge has low volatility, knowledge tends to be useful over a relatively longer time span without updates and therefore repository is a better choice for knowledge sourcing (Kankanhalli et al. 2003) than colleagues or forums as the knowledge is readily available. On the other hand, personalization strategy or sourcing knowledge from colleagues is used in more volatile industry (Kankanhalli et al. 2003). Also the discussion in forums are based on ongoing practice, thus with up-to-date knowledge.

Hypothesis 5. The high the knowledge volatility, the more likely knowledge workers will turn to colleagues and forums rather than repositories.

Influence of Individual Characteristics

Cognitive Style: Extrovert vs. Introvert

Cognitive style is a person's preferred way of gathering, processing, and evaluating information. It influences how people scan their environment for information, how they organize and interpret this information, and how they integrate their interpretation into the mental model and subjective theories that guide their actions (Messick 1984). The cognitive style is a broad term and has a lot of components, what we study here is introversion vs. extroversion.

According to the Myers-Briggs type indicator (Mayer and McCaulley 1985), extroverted individuals tend to relate to the outside world, whereas introverted individuals relate to their own inner thoughts. Extroverts are known to be sociable, interactive, externally oriented, and gregarious. Introverts are more internally oriented, intensive, territorial, enjoy limited relationships, are reflective, and are energy conservative (Mayer and McCaulley 1985). This dimension will affect channel preference since different channels represent different opportunities on interaction with outside world or inner thoughts. Specifically, individuals who are extroverted are more likely to seek out colleagues with whom they can interact as opposed to relying on repositories and forums.

Hypothesis 6. The more extroverted the knowledge worker, the more likely knowledge workers will turn to colleagues rather than repositories and forums.

Cognitive Ability: Expertise

Expertise refers to how efficiently and effectively an individual can solve a problem in a particular domain. Many previous studies have considered expertise either as an important predictor (Sussman and Siegal 2003) or as a control variable (Gray and Meister 2004) for knowledge sourcing.

Studies have found a significant relationship between the expertise and the knowledge seeking behavior. For example, knowledge workers with low expertise often have access to and prefer seeking help from more experienced colleagues or organization-assigned mentors (Becerra-Fernandez & Sabherwal 2001). On the contrary, Dewhirst (1971) suggests that there is a psychological cost when a knowledge worker asks an accessible colleagues for information -- they are implicitly making a partial admission of limited competence. Dewhirst further argues that this cost is more significant when the subjects are assumed to be of high expertise. Sourcing knowledge from a repository requires that knowledge workers know the directory in the organization, and sourcing knowledge from a forum requires that knowledge workers know the right question to ask. Empirical studies find that searching without adequate knowledge is time consuming (e.g., Malhotra et al. 2000).

Hypothesis 7. The higher the expertise, the more likely knowledge workers will turn to forums rather than colleagues and repositories.

Social Exchange Orientation: Reciprocation Wariness

Reciprocation wariness is a generalized cautiousness in reciprocating aid stemming from a fear of exploitation in interpersonal relationships (Eisenberger et al. 1987). Flynn (2005) posits that people who seek knowledge directly from others are committing themselves via the norm of reciprocation to help that person at some point in the future. It implies that if the knowledge worker is wary of reciprocation, he or she might try to avoid direct one-to-one contact. On the contrary, knowledge workers have no obligation to return the favor to a specific person if they use the knowledge from repository, since repositories are used as a communal source of knowledge built by the organization for the knowledge workers to reuse

(Holsapple and Joshi 2001; von Krogh 2002). When sourcing knowledge from forums by asking a question, knowledge workers may not feel obligated to return the favor since identities are not necessarily exposed and knowledge exchange is considered to be social exchange (Fulk et al. 1996), where one-to-one relationships are not distinct.

Hypothesis 8. The higher the reciprocation awareness, the more likely knowledge workers will turn to repositories or forums rather than colleagues.

	Colleagues	Repositories	Forums
Tasks			
Routineness (H1)	low	high	low
Interdependence (H2)	high	low	low
Urgency (H3)	high	low	low
Knowledge			
Codifiability (H4)	low	high	low
Volatility (H5)	high	low	high
Individual			
Extraversion (H6)	high	low	low
Expertise (H7)	low	low	high
Reciprocity wariness (H8)	low	high	high

Table 1. Hypotheses Summary

PROPOSED METHODOLOGY AND ANALYSIS

A survey instrument will be used to collect the data. The unit of analysis is an individual who has a choice among knowledge sourcing options (i.e., colleague, repository, virtual community) and is involved in a knowledge task. The instrument development process is currently underway. Items exist for all constructs except for knowledge volatility. The data will be analyzed using PLS.

SUMMARY AND CONCLUSIONS

To stay competitive in today's business environment, companies need to make sure that proper sources of knowledge are available to their knowledge workers. This research contributes to theory in knowledge management as it expands our understanding of how various knowledge transfer channels are selected. This research contributes to practice by helping companies understand why employees may or may not be using the various knowledge channels available to them.

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